**TRADING ENERGY DERIVATIVES – MATH-GA\_2800**

**Homework / Project #3 – Design systematic energy trading strategy**

**Due no later than March 17, 2022 (before 7pm)**

You have an option to team up with one student from your class or do the assignment individually. If you choose to team up, you must submit to Yicheng the names of people working together by **March 3, 2022**.

**ASSIGNMENT**

Follow the back-test template specified for homework #2 and design your own rule-based systematic futures trading strategy.

The strategy should trade one of the four energy futures, spreads, or any other combination of them. The signals could be constructed using price data, fundamental or positioning data, or any other data sources that you can find and deem to be relevant. Multiple signals could be combined. The choice of the lookback period is up to you.

1. Design and back-test the rule-based strategy and produce the following performance metrics (see example in Lecture 4):
   1. Graph the strategy equity line (cumulative rolling P&L) and rolling drawdown (DD)
   2. Calculate Annualized P&L and Maximum Drawdown in $$
   3. Calculate Sharpe Ratio (annualized)
2. Analyze the stability of your output with respect to the choice of model parameters
3. Prepare a summary document that explains your strategy to a potential investor. The summary must include
   1. Clear description of your original investment idea (i.e., why you expected the strategy to work)
   2. The summary of all strategy results from 1)-2)
   3. Comments about strategy performance under different market regimes and the risks of the strategy

Extra bonus points could be awarded for innovative ideas and implementation methods.

Submit the summary document, Excel strategy output, and the code (if using Python) to NYU Brightspace.